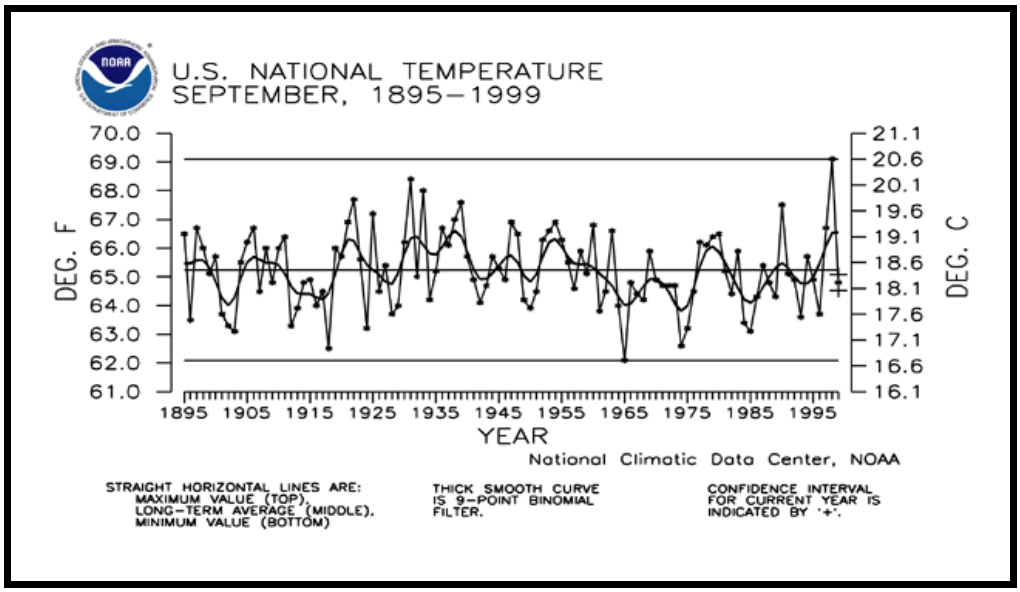
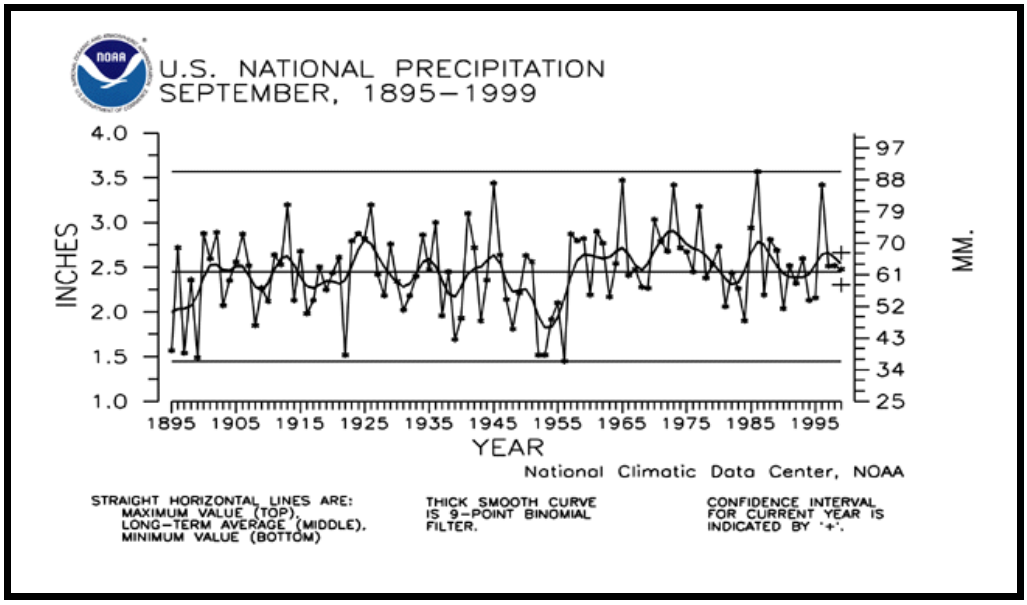
Monthly Activity Report

September 1999





Preliminary data for September 1999 indicate that the monthly mean temperature averaged across the contiguous U.S. was near the long-term mean. About four percent of the country was much warmer than normal, while less than one percent of the country was much cooler than normal (top figure).

Based upon preliminary data, September 1999 ranked near the long-term mean for precipitation. Nearly 13 percent of the country was much drier than normal, while about ten percent of the country was much wetter than normal (bottom figure).

DIRECTOR'S HIGHLIGHTS

Employee Recognition

Tom Ross, a National Climatic Data Center meteorologist, staffed the National Oceanic and Atmospheric Administration's (NOAA) exhibit at the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE III). Tom received a letter of commendation from the National Environmental Satellite, Data, and Information Service Assistant Administrator, Gregory Withee, and Deputy Assistant Administrator, Susan Zevin, for his outstanding effort. He was cited for his professionalism and personal interaction with the international visitors, which made the NOAA exhibit a success.

Travel to Russia

August Shumbera, Chief, Active Archive Branch at the National Climatic Data Center (NCDC), traveled to Russia to meet with representatives of the All-Russian Research Institute for Hydro Meteorological Information (RIHMI), at Obninsk, Russia, to plan data exchange activities for next year and to review the progress of current joint projects. NCDC and RIHMI are actively cooperating on the Comprehensive Aerological Research Data Set quality control and updating the rescue of approximately 10,000 tapes of synoptic data, dating back to the 19th century. The data on the old tapes has been rescued and daily precipitation data extracted for stations in the former Soviet Union from about 1891 to 1996. The data were made available during the visit for the NCDC project to prepare a comprehensive U. S.-Russian, long-term precipitation data set.

China Trip

Dr. Thomas Peterson, Acting Chief of the Scientific Services Division, gave a presentation on *Building Research Quality Climate Data Sets* at the *Symposium on Climate, Environmental Change and Regional Impacts* in Beijing, China, September 22nd. In addition to attending this two-day symposium in association with the China Meteorological Administration, he participated in the two-day *Workshop on Impact of Ocean Variability on Climate* which was held in association with the Chinese Oceanic Administration. Both events marked the 20th anniversary of the Peoples Republic of China – U. S. cooperation in the field of science and technology.

Reduction in Mission Support Services Contract

The transition of several contractor support services to the government was completed in September. National Climatic Data Center personnel resumed responsibility for servicing customer orders for tailored digital, satellite, and subscriptions; for the center-wide support for digital imaging services; and miscellaneous climate services. Photo-processing services were discontinued altogether (including the production of micrographic archives). The off-site photo lab was vacated and the government property has been excessed. The final micrographic production (microfiche of historical Cooperative weather observations) has been quality controlled and filed in the archives.

New Contract Awarded

A new contract for the professional services of a registered nurse for the Federal Occupational Health Unit (FOHU) at the Veach-Baley Federal Building Complex in Asheville, NC, was awarded on September 22, 1999, to Health Management Resources, Inc., of Landover, MD. The contract, which commences on October 1, 1999 (FY 00), contains options for three additional years. The Maryland based company submitted the lowest competitive bid among eight regional small business health professional providers. A total of

36 qualified companies had shown interest by requesting solicitations regarding the contract. The CEO of Health Management Resources announced the company's intention to retain the services of Mrs. Cindy Maney, the FOHU Registered Nurse employed by the previous contractor since 1997, to insure the continuity of a successful health unit operation serving participating federal employees in the local Asheville area.

CLIMATE DATA AND INFORMATION SERVICES

✦ Database Development

Bar Code Sweeping Enhancement

The Orkand Corporation completed software for the government's use to facilitate the automatic check-in of observation forms into the Archives Record Check-in (ARC) system. Although a prototype system for the bar code sweeping was developed about one year ago, it had never been fully implemented. Most of the National Weather Service Cooperative Weather Observation forms now bear the bar code labels. The bar code contains the station's identification index number. Once the bar code is swept, the site's check-in screen is displayed on-screen. The on-screen information is reviewed by the government staff conducting the "pre-edit" (preliminary quality control prior to keying). The new "sweeping" process consolidates several manually-intensive steps and significantly reduces handling of forms.

Summary of Day (SOD) Project

Inventory files for the serially complete SOD project have been produced for 1951-1998 for stations east of the Mississippi River and for 1991-1998 for stations west of the Mississippi. The 1951-1990 serially complete data set for the western states has been completed and is being evaluated. The National Climatic Data Center is working with the Climate Diagnostics Center and the U.S. Department of Agriculture Natural Resources Conservation Service on this project.

Global Precipitation Climatology Project

Several members of the National Climatic Data Center's (NCDC) staff met with Dr. Paul Krause, U.S. Army Topographic Engineering Center (TEC), and Rob Blevins, Central Intelligence Agency (CIA), on Thursday, September 2, 1999, to discuss the Global Precipitation Climatology project. Results of NCDC's literature review on previous precipitation classification studies were presented and the strategy for classifying precipitation data for Phase 2 was discussed. Rob Blevins presented the CIA requirements and gave several very interesting examples of how his office uses climate data. Requirements from the TEC will be firmed up over the next month, and NCDC will complete a proposal for Phase 2 of the project by mid-October.

Proposal Submitted

The "Proposal for the Calibration and Validation of Special Sensor Microwave Imaging Sounder (SSMIS) Land Surface Products" was submitted to Gene Poe at the Naval Research Lab in Monterey, CA. The primary objective of this proposal is to investigate the additional frequency measurements in hopes of improving our surface products by incorporating the new SSMIS data.

✦ Data and Information Distribution

High Resolution Hurricane Data

At National Weather Service/OM request, the National Climatic Data Center (NCDC) collected all possible Automated Surface Observing System high resolution data (generally 1-minute time intervals) for stations in the path of Hurricanes Dennis and Floyd. The data will be used for post-hurricane analyses. The major impact on NCDC for performing this work is increased telephone line charges and potentially reduced service capacity.

September Climate Watch Page Features Hurricane Floyd

The National Climatic Data Center's (NCDC) September Climate Watch page was put on-line on September 23rd. The primary focus was the impact of Hurricane Floyd on the Eastern U.S. The report contains static and animated satellite pictures, Next Generation Weather Radar data, isoplethed rainfall charts for the U.S. East Coast and North Carolina, satellite before-and-after-Floyd pictures of Eastern North Carolina, station rainfall totals and links to numerous other sites with Floyd-related information. The report and its cover image depicting scaled satellite pictures of Floyd and Hurricane Andrew taken when the storms were located at the same geographic location was also featured on the National Oceanic and Atmospheric Administration's Home Page.

Climatic Extremes/Weather Events System Sets Record

The National Climatic Data Center's (NCDC) Climatic Extremes/Weather Events web pages recorded the highest usage to date with more than 235,000 hits in one month. Many of this system's web pages have been extensively updated during the past 2-3 months, such as "U.S. Hurricanes," "U.S. Tornadoes," "1991-1999 Weather Events," "Billion Dollar Weather Disasters," "El Niño/La Niña," and "Global Climate Change." Customer Service personnel frequently refer users to these web pages. A number of news media, educational, and government web systems have links to this NCDC web page.

NOAAPort Coordination

The Southern Regional Climate Center (SRCC) at Louisiana State University (LSU) is installing a NOAAPort satellite receiver system. Initially they will process the NWSTG/NCEP Channel. Concurrent with this activity, the LSU network upgrade to the vBNS (Very high-speed Broadband Network System) was made operational. The National Climatic Data Center (NCDC) is coordinating potential resource sharing with the SRCC for the NCDC NOAAPort Data Access and Retrieval System.

ArcView Used for Querying ISMCS Stations

ArcView was used to show the distribution of stations for the various International Station Meteorological and Climate Summary (ISMCS) CD-ROM versions and for different elevation thresholds. This application of ArcView may be used in future versions of ISMCS so that users could query the station list for specific elements or tables.

Hurricane Floyd Report

The National Climatic Data Center's Monitoring/ Rapid Response Team has placed a detailed report on-line concerning Hurricane Floyd. The report includes storm impact information, rainfall tables and maps, wind gust data, Next Generation Weather Radar images, satellite images/movies, and links to other sources of information and data. Cumulative rainfall data for Hurricanes Dennis and Floyd are also included. The URL address is: extremes0999.html

Some of the notable preliminary statistics for the storm are: Most rainfall-Wilmington, NC, with 19.05 inches; highest reported wind gust-Wrightsville Beach, NC, with 138 mph; and number of homes flooded-more than 30,000 in

North Carolina. The National Environmental Satellite, Data, and Information Service's Public Affairs Office released a "media advisory" regarding this report.

Data Rescue Activities

During September, the Meteorological Paper Imaging project saw no paper records shipped to the West Virginia contractor as the National Climatic Data Center (NCDC) began to wind down this contract. Over the life of the contract, some 40,500 units were shipped (approximately 17 million pages). During September, the return of original records went into full swing as a total of 4,614 boxes were returned, leaving 21,000 boxes yet to be returned. A total of 56 CD-ROMs were received giving NCDC a total of 2,101 CD-ROMs containing 15.9 million images.

During September, 2,511 fiche were shipped to Image Entry (IE) for keying under the current Data Rescue project (MMK1 - Cooperative Observations). This brings the total number of fiche shipped to IE to 20,218 under the current contract which expired at the end of September, 1999. To date, 37 cartridges of keyed Cooperative data have been returned to the National Climatic Data Center (NCDC) containing data from 15,419 fiche. Seventy six percent of the data shipped to IE has been keyed and returned to NCDC.

✦ Research Customer Service Group Requests

Regional Climate Center (RCC) Study

Chad Kauffman is a graduate student at the University of Nebraska at Lincoln, NE, and associated with the High Plains Regional Climate Center. He is interested in computing and comparing spline-fit daily means for the pre- and post-Automated Surface Observation System (ASOS) periods at unspecified stations. Per his request, the National Climatic Data Center sent him the programs used to compute 1961-1990 daily normals and sample data files. The NCDC suggested he might want to try to automate the procedure and explained the criteria and current manual procedure used to produce daily normals. Copies of the programs and background were sent to several of the Regional Climate Centers to solicit interest, comments, and suggestions.

✦ Requests from News Media

Interview

Dr. David Easterling, Acting Chief, Climate Archeology and Analysis Branch of the National Climatic Data Center, was interviewed by Seth Borenstein of Knight-Ridder News for an article he is writing on extreme climate events.

Hurricanes Spawn Media Requests

Dr. Thomas Peterson, Acting Chief of the Scientific Services Division, explained many aspects of hurricanes in an interview with a reporter from the *Wall Street Journal*.

Interviews

Mike Changery, Climate Monitoring Branch Chief at the National Climatic Data Center, conducted two interviews with major news media on climate extremes and hurricane trends. One interview was with Bob Herbert of the New York Times concerning trends in extremes of temperature and precipitation in the historical record. The second was with Jan Hollingsworth of the Tampa Tribune concerning relationships between the increased number of tropical systems in the decade of the 1990s and global warming.

National Public Radio (NPR)

Three National Climatic Data Center staff members participated in an hour-long question/ answer session with the general public on a local National Public Radio affiliate. The session covered all aspects of hurricane terminology, development and affects on coastal infrastructure. The recent passages of Hurricanes Dennis and Floyd through eastern North Carolina has led to greatly increased concern by the public about hurricane effects.

North Carolina-Flooding Comparison Images

NBC News affiliate, Channel 6 of Charlotte, NC, was provided satellite gif images of the eastern North Carolina region depicting the areas severely affected by flooding from Hurricane Floyd. The before and after flooding comparison images were prepared from 1-KM multi-channel NOAA-15 polar-orbiting satellite scenes for July 31, 1999 (the middle of the drought), and September 18, 1999 (the flooding). The Kerr Reservoir on the North Carolina-Virginia border appeared equally well in both scenes and could be used as a measure of the areal extent of the severe flooding. The National Climatic Data Center was able to deliver the comparison images within twenty-four hours after receiving the request from the reporter.

Hurricane Interview

WHNS, Channel 21, interviewed Sam McCown, a meteorologist at the National Climatic Data Center, who provided a brief description of how hurricanes form and their life cycle. The interview was aired September 21, 1999.

Discussions on Public Radio

On September 15th, the afternoon Hurricane Floyd made landfall, WCQS radio in Asheville, NC, aired a live call-in talk show concerning hurricanes and tropical cyclones. National Climatic Data Center meteorologists Dr. Tom Peterson, Tom Ross, and Sam McCown, answered callers' questions on a wide variety of topics. Among items discussed were how a hurricane's eye wall forms, building strategies to alleviate damage, hurricane climatology, and the formation of seiches.

U.S. Drought and Heat Wave Information

The National Climatic Data Center Climate's (NCDC) monitoring staff continue to respond to media inquiries concerning the U.S. drought and heat wave information published in the Monthly Climate Report. Contacts included three major newspapers in the mid-Atlantic area including the Wall Street Journal, and two media outlets in the Midwest.

✦ Private Industry Interactions

Weather Derivatives Business - Improved Data Access via the Web

National Climatic Data Center Data (NCDC) personnel have completed and delivered to Earth Satellite Corporation (EarthSat) the capability to download multiple weather stations in a single order via the On-line Data Store. These data are derived from the edited and unedited *Local Climatological Data* sets. Customers are now able to generate several files including all stations for a desired month. EarthSat will use this new feature to streamline and improve their analyses in the emerging Weather Derivatives business.

✦ Interesting Requests

Racing Performance

The National Climatic Data Center (NCDC) was contacted by an automotive engineer who is attempting to prepare for an upcoming automobile race to be held in October in Mansfield, OH. The engineer obtained meteorological data for use in a computer model which calculates the optimum air-fuel ratio for his automobile engine by determining the average atmospheric pressure. The sensor that determines the appropriate fuel mixture is affected by pressure. He was provided with surface pressure normals from the NCDC publication *Local Climatological Data Annual Summary* for Mansfield.

Lightning Hazards in South Florida

A consulting meteorologist contacted the National Climatic Data Center (NCDC) to obtain meteorological data which will be used in a potential lightning death investigation in Miami, FL, during the first week of October 1998. A boy was killed while waiting inside a sheltered bus stop during a thunderstorm. The investigation revolves around faulty wiring in the shelter that apparently electrocuted the victim during a lightning strike. The NCDC provided the consultant with hourly surface weather observations, severe weather

warnings and statements issued by the National Weather Service, and surface and radar charts.

Heating Trucks

A product development engineer with Espar Heater Systems contacted the National Climatic Data Center (NCDC) to obtain climatological data which will be used in a fuel reduction study. The gentleman is testing a diesel fired heater or micro furnace which will be used in the commercial trucking industry. The micro furnaces will provide truck drivers with heat while they sleep, thereby eliminating the need to idle the vehicle's engine to keep warm. The NCDC directed the engineer to meteorological data from CLIMVIS via NCDC's home page. He was able to select maximum and minimum temperature data from various National Weather Service (NWS) stations. Espar is working in conjunction with the U.S. Department of Energy and Oak Ridge National Laboratory in Oak Ridge, TN, in this endeavor to reduce fuel consumption in the trucking industry.

Hot Dog Bites Man

On July 5, 1997, in Quogue, NY, an adverse encounter occurred in which a man was bitten in the face by a dog. A lawsuit to recover damages incurred by the victim has been filed and the plaintiff's attorney believes that the weather conditions at the time of the incident are an important aspect of the case. The attorney theorized that the canine became vicious and dangerous as a result of being left in the defendant's vehicle for a prolonged period of time. High temperatures in the area ranged from the upper 70's to upper 80's on the day in question. The National Climatic Data Center (NCDC) provided hourly surface weather observations from Westhampton, N.Y., a relative humidity computation graph, and a heat index chart to the attorney for the period in question.

✦ Regional and State Climate Centers

Bureau of Land Management Cooperation

The program for Climate, Ecosystem and Fire Applications (CEFA), developed in collaboration with the Western Regional Climate Center (WRCC), has now received funding from the Bureau of Land Management. The Web CEFA URL is: http://www.dri.edu/Programs/CEFA. CEFA was formed on October 1, 1998, through an assistance agreement between the Bureau of Land Management Nevada State Office and the Desert Research Institute, the home of the WRCC. The primary functions of CEFA are to perform studies and applied research to improve the understanding of relationships between climate, fire and natural and human resources, and to provide climate information directly for fire and ecosystem decision-making and planning.

Visit to Midwestern Regional Climate Center

Steve Doty of the National Climatic Data Center visited the Midwestern Regional Climate Center (MRCC) to discuss several items of interest. Topics of discussion included the establishment of standard prices among the Regional Climate Centers, the processing and quality control of real-time daily observations from the Cooperative network, a possible joint effort with a hail atlas, and the MRCC's project with their State Climatologists to key data from forts for the mid-1800's.

Near Real-Time Observations

In a joint effort, the National Climatic Data Center (NCDC) and the six Regional Climate Centers are making daily observations from the Cooperative Observer Network available in near-real time. The Regional Centers are decoding the observations as received from the National Weather Service and

are performing quality control before sending the data to the NCDC. The Regional Centers have been working closely with the National Weather Service Forecast Offices in order to have the observations encoded correctly and correct station identification placed with each observation. NCDC is merging the data from the six inputs, performing additional quality control, converting to an archival format, and finally loading the data to the NOAA National Data Center Climate Data On-line system. These data, from over 5,300 stations, are then available on the web to world wide customers.

Business Plan

Work continues on the business plan as conference calls were held with the working group. The working group, comprised of two members each from the National Climatic Data Center (NCDC), Regional Climate Centers (RCC), and State Climatologists, will hold a joint meeting in late October to draft the plan. The goal remains to have a preliminary plan ready for presentation to NCDC and RCC management in early December 1999.

State Climatologists Visit NCDC

Dr. Dan Leathers and Dr. Ted Sammis, State Climatologists for Delaware and New Mexico, respectively, visited the National Climatic Data Center (NCDC) during September under the State Climatologist Exchange Program. Dr. Leathers worked on updating the thunderstorm database as originally produced by NCDC. Dr. Sammis worked on questions relating to the availability of data via the web.

SCIENTIFIC AND PROFESSIONAL ACTIVITIES

✦ Climate and Global Change

Climate Monitoring Report

The National Climatic Data Center's Climate Monitoring Report, covering August and the 1999 summer season, was released on the web on September 15th. Adobe Illustrator and Photoshop software were used to produce 108 gif images for display. For the United States, late month precipitation helped temper the drought severity in the mid-Atlantic region with the driest conditions shifting toward the Tennessee and Ohio Valley region. Alabama, Tennessee, and Louisiana all experienced their second driest August in 105 years, with Indiana and Kentucky their third driest. Late summer heat was generally was confined to the Southeast and Gulf states with Alabama, Georgia, South Carolina and Louisiana all experiencing their third warmest August in 105 years. For the summer season, the United States averaged warmer and drier than average with significant regional variations. The Northeast region experienced its second driest summer in 105 years with individual states of Connecticut and Rhode Island having their driest summer. However, the upper Mississippi Valley and Great Lakes areas experienced a very wet summer season. Globally, August 1999 continued the unprecedented string of above average temperatures. August 1999's above average temperatures were significantly cooler than those experienced just last August during the strong La Niña. However, for only 6 months in the entire decade of the 1990s have global temperatures been below the long-term average.

✦ Working Groups/Committees/ Meetings

National Drought Policy

A National Climatic Data Center employee has been actively participating in the National Drought Policy Commission's Monitoring and Prediction Working Group. The Commission is mandated to prepare a report for Congress on improving the integration and coordination of Federal policy designed to prepare for and respond to serious drought emergencies. The working group is preparing a statement for the Commissioners of needs, gaps and recommendations relating to the monitoring, assessment and prediction of drought.

OnBase Users Conference

Steve Doty participated in the first annual OnBase users conference. A presentation was given highlighting the massive amount of images being processed by the National Climatic Data Center (NCDC). Presentations by the Hyland staff highlighted the varied tasks that OnBase can perform, many of which would increase efficiency at NCDC. Hyland representatives will be invited to visit NCDC at a later date.

Data Systems Advisory Committee

Steve Evans attended the quarterly Data System Advisory Council (DSAC) meeting which was held in Silver Spring, MD, on September 14-15, 1999. Steve was elected to serve as DSAC chairperson for FY 00. Meeting notes have been distributed to National Environmental Satellite, Data, and Information Service management, Center Directors, and interested staff.

Comprehensive Aerological Reference Data Set (CARDS)

The CARDS project hosted a meeting of experts to discuss radiosonde temperature adjustments and trends for contribution to the Intergovernmental Panel on Climate Change's Third Assessment Report. Visitors included Dr. Rebecca Ross of the National Oceanic and Atmospheric Administration's (NOAA) Air Resources Laboratory, Dr. William Murray of NOAA's Office of Global Programs, Dr. Jim Luers of the University of Dayton, and Dr. David Parker of the United Kingdom Meteorological Office.

Committee on Atmospheric Icing

Neal Lott of the National Climatic Data Center (NCDC) participated in the fall meeting of the American Society of Civil Engineers Committee on Atmospheric Icing, in Portland, OR, September 28-29, 1999. The committee includes meteorologists and engineers from various government agencies and private companies, and focuses on climatologies and standards for atmospheric icing and its effects on structures, overhead lines, cables, etc. The three main efforts now in progress are: 1) expansion of the committee's Eastern U.S. freezing rain climatology to include the rest of the country; 2) including the climatology in various standards and publications; and 3) using the Automated Surface Observing System (ASOS) Rosemount ice sensor data to provide ice accretion amounts at hourly, 3-hourly, and 6-hourly intervals. The committee's Eastern U.S. freezing rain radial ice thickness climatology (a 50-year recurrence interval map) has been well-received within industries concerned with freezing rain, in that it provides information never before available. There is now a great demand to expand this to include the entire U.S. Funding is being sought from the Federal Emergency Management Agency and other sources for this effort. A preliminary version of the expanded map will use the expertise of the state and regional climatologists to estimate the 50-year values in areas not yet modeled. The National Weather Service and others plan to use the ASOS ice sensor data in an operational/forecast mode during ice storms, possibly as early as this winter, for selected sites. Overall, these efforts to better describe and understand icing should have significant economic benefits to the Nation.

✦ Publications

Tropical Cyclone Book Nears Completion

Three copies of the final "proof" of the *Tropical Cyclones of the North Atlantic Ocean* have been sent to the Tropical Prediction Center for their review. If this proof is deemed acceptable, the photographic negatives and digital files will be sent to the printer for publishing. A blue line proof of the document will be prepared by the printer for review prior to final publication in December. This revised edition will include hurricanes from 1871 through 1998.

✦ Interactions with NOAA Line Offices

NOAA 30th Anniversary Committee

A review of ongoing National Oceanic and Atmospheric Administration's (NOAA) 30th Anniversary planning activities was conducted during a weekly telephone conference. A planning calendar is nearing final draft, which incorporates facts on NOAA gathered by the committee. It will be made available to all NOAA employees. Other items being developed by the committee include a poster, a 30th anniversary logo, a new NOAA video, an archival video with clips of past NOAA administrators, a web page, a CD-ROM and briefing kit to assist with open house/outreach endeavors. Committee Chair, David Miller, NOAA Office of Public and Constituent Affairs (OPCA), and Barbara Semedo, Director, OPCA will present committee ideas on the items being developed and several planned events to Dr. Baker, NOAA Administrator, on October 8th.

EMPLOYEE ACTIVITIES

✦ EEO and Community Outreach

State Fair Exhibit

The National Climatic Data Center (NCDC) was invited by the Western North Carolina Agricultural Council to participate as an exhibitor at the Western North Carolina State Fair which runs through mid-September. NCDC has a display highlighting regional and state climate products such as temperature and precipitation normals, frost/freeze probability maps, local climate extremes and web information.

Habitat for Humanity

Several National Climatic Data Center employees helped work on a Habitat for Humanity home on the Day of Caring, held on September 8th.

Local Federal Coordinating Committee

The Combined Federal Campaign (CFC) held a kickoff ceremony on Thursday, September 9th. National Climatic Data Center (NCDC) representatives John Hughes and Karol Pittman, members of the Local Federal Coordinating Committee, attended as well as NCDC's 1999 CFC Coordinators David Smith and Myra Ramsey.

✦ Personnel Resources

New Hire

Ken Schmidt has been selected to fill a vacancy for a UNIX systems administrator position within the Systems Branch. Ken will provide much needed support for the media management software, job scheduling, and general UNIX utilities related to tape-based data processing. He has been working at the National Climatic Data Center as a contractor for the past 14 months in support of the Unisys Software Migration Project, and has an excellent grasp of the media management software.

✦ Training

CPR Training

Jeff Arnfield completed Community CPR and Basic First Aid classes offered by the American Red Cross, September 30, 1999.

Leadership Training

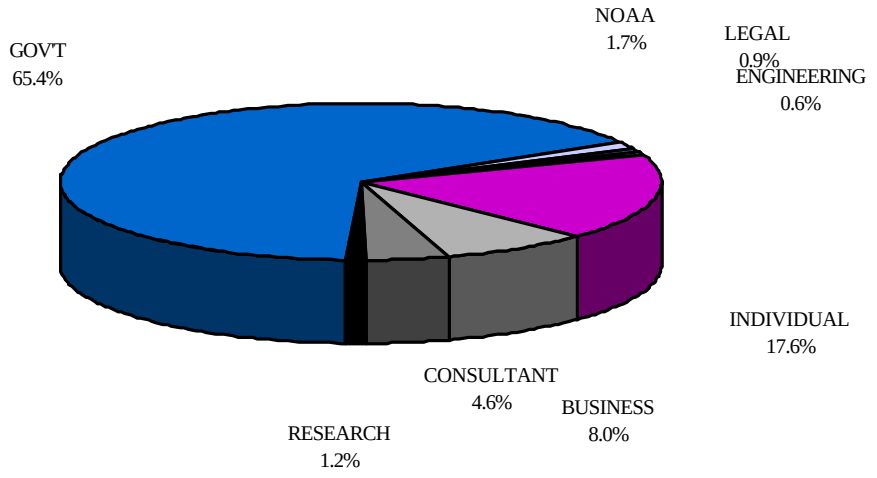
A member of the National Climatic Data Center's Climate Archeology and Analysis Branch attended the National Oceanic and Atmospheric Administration's Leadership Training Program September 13-17, 1999.

The following charts and graphs show the latest National Climatic Data Center user and data statistics.

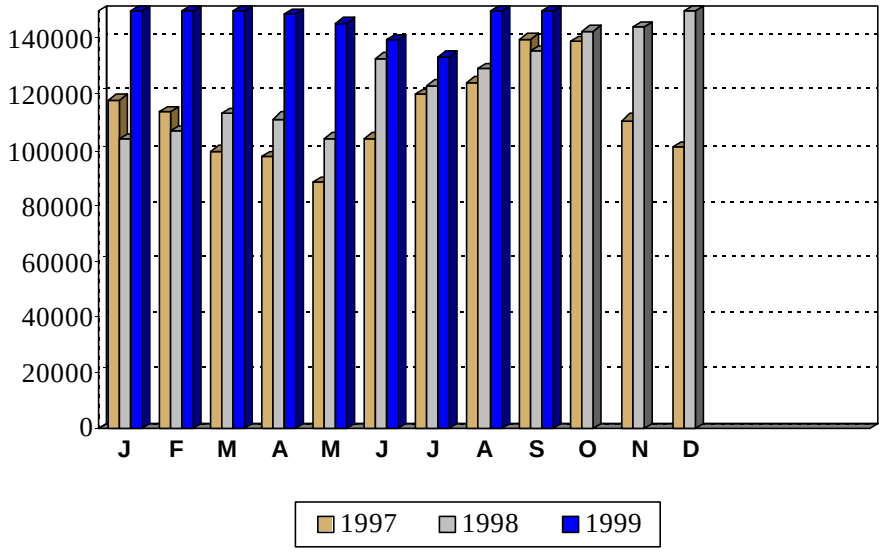
Customer Profile Based on Orders

No information available for the month of September

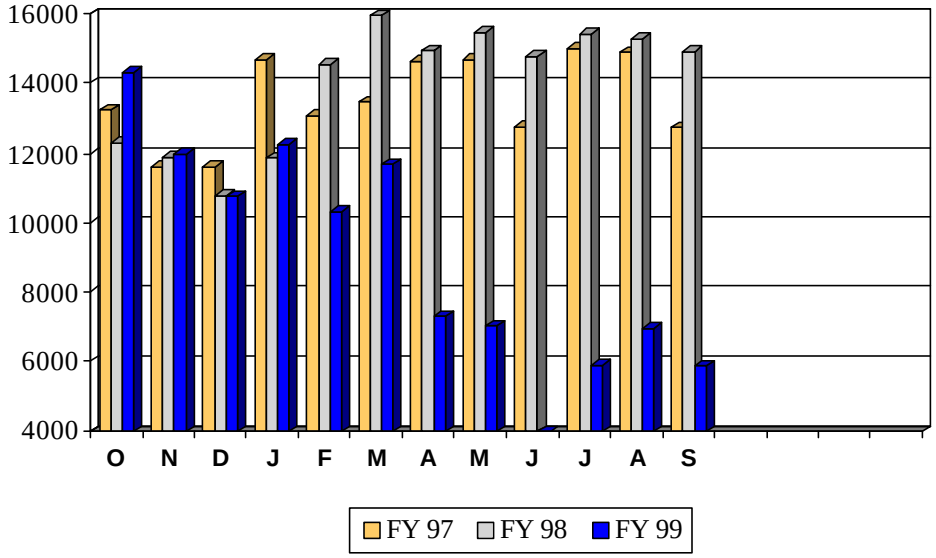
Customer Profile Based on Order Cost

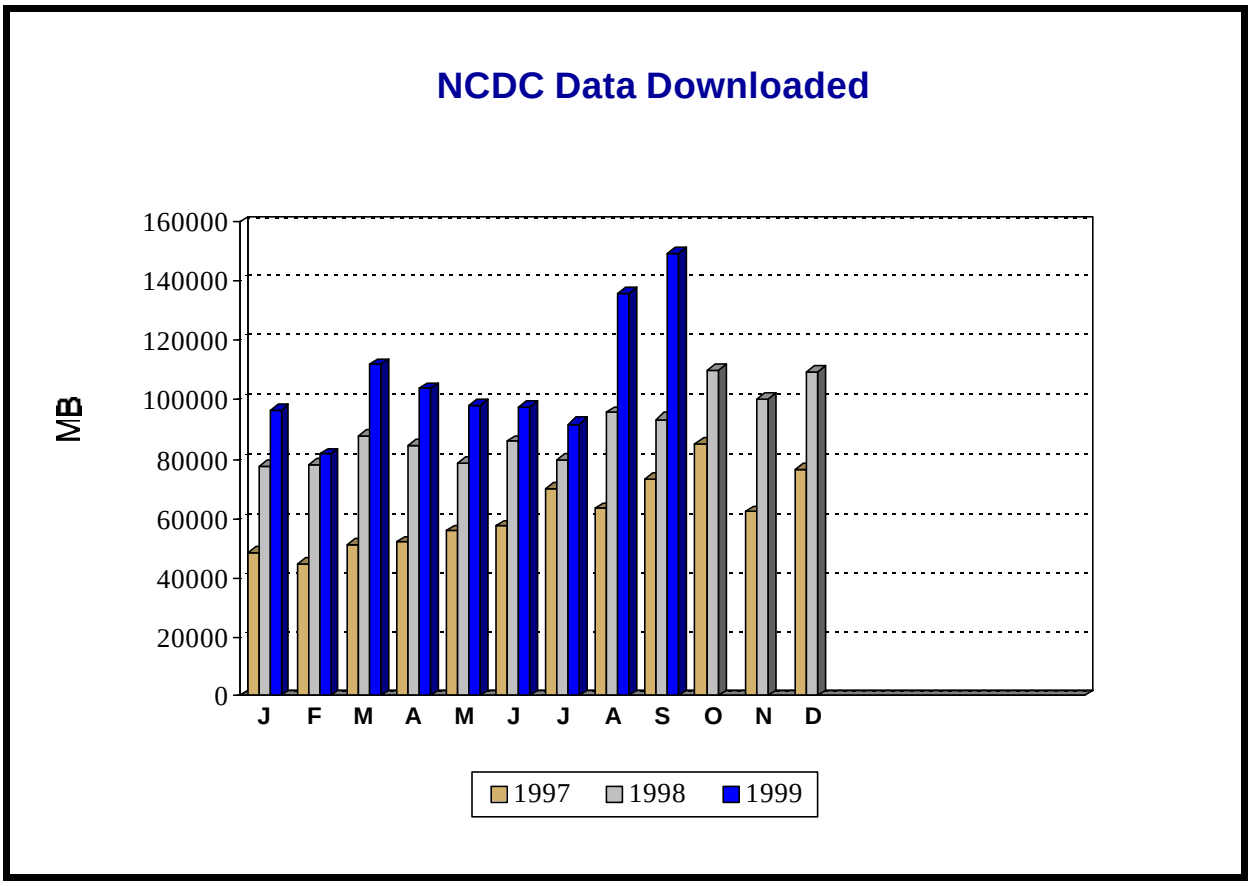


NCDC On-Line Users



NCDC Off-Line Customer Contacts

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